Paper No. 26

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte LOUIS J. SHRINKLE
and MATTHEW SCHWALL

_____

Appeal No. 1997-1174
Application 08/353,681

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ON BRIEF

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Before THOMAS, HECKER and GROSS, ***Administrative Patent Judges***.

HECKER, ***Administrative Patent Judge.***

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 and 12 through 21. Claim 1 was canceled by an amendment after final rejection, Paper No. 13. Thus, claims 12 through 21 remain finally rejected, and constitute all claims pending in the application.

The invention relates to an apparatus for generating a digital compensated signal derived from an analog signal generated by a magnetoresistive (MR) head in a disk drive system. MR heads have a non-linear response to the magnitude of flux as a function of the orientation of the flux. This results in the signal generated by the MR head being asymmetrical, that is, the magnitude of the positive portion of the signal will be different from the magnitude of the negative portion of the signal with all other factors being constant except for the orientation of the flux. The asymmetry of the signal further causes a baseline shift in the signal due to the AC coupling employed in recovering the signal generated by the MR head. Appellants' invention compensates for asymmetry and baseline shift in the signal generated by a MR head.

Independent claim 12 is reproduced as follows:

12. An apparatus for generating a digital compensated signal derived from an analog signal generated by a magnetoresistive head in a magnetic memory system where said analog signal has a baseline shift and has asymmetry in the form of positive peaks and negative peaks in said analog signal having different amplitudes, said apparatus comprising:

a converting means for converting said analog signal into a digital signal where said digital signal is comprised of a series of digital samples;

processing means for processing each of said digital samples into a compensated sample where the resulting series of compensated samples form said compensated signal, said compensated signal being a digitized representation of said analog signal compensated for baseline shift and asymmetry where said compensated signal has digitized positive peaks and digitized negative peaks of a defined absolute digital value, said processing means includes:

a baseline correction means responsive to a digital sample from said converting means for generating a digital baseline corrected sample from said digital sample; and

an asymmetry correction means responsive to the baseline corrected sample from said baseline correction means for generating the digital compensated signal having positive and negative peaks of a defined absolute amplitude and no baseline shift.

The Examiner relies on the following references:

Cardero et al. (Cardero)	5,101,395	Mar. 31, 1992
Fennema	5,220,546	Jun. 15, 1993
Christner et al. (Christner)	5,412,518	May 2, 1995 (filed Dec. 16, 1993)

Claims 12 through 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Christner in view of Fennema, further in view of Cardero.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

After a careful review of the evidence before us, we will not sustain the rejection of claims 12 through 21 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally

recognizable 'heart' of the invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied***, 469 U.S. 851 (1984)).

The Examiner has cited Christner for adaptively controlling the biasing current applied to MR heads. According to the Examiner, Christner lessens the difference in the absolute magnitude of the positive and negative peaks, but does not set the peaks to a defined "absolute" magnitude. The Examiner then combines Christner with Fennema, to obtain positive and negative peaks of the same absolute amplitude, to increase system precision. However, since this combination lacks baseline correction, Cardero is added to the combination for baseline correction, to decrease sensitivity to baseline shifts. (Final rejection, Paper No. 10, pages 3 and 4.)

Appellants argue that Christner adjusts bias current to the head to thereby minimize, but not eliminate asymmetry, and Christner does not correct for baseline shift (brief-page 6).

The Examiner responds that Cardero provides for baseline shift adjustment (answer-pages 2 and 3).

Appellants urge that Fennema is non-analogous prior art, i.e., the track seeking art, but has not clearly identified their art. We agree with the Examiner that Fennema is analogous prior art, the disk drive art.

Appellants argue that Fennema's goal is not signal difference minimization, Fennema's goal is track centering, and state:

> Even if Fennema's amplitude difference technique were somehow combined with Christner et al., the result would still fail to meet the asymmetry portions of Applicant's claim 12. ... It is clear from the quoted language of claim 12 that the asymmetry correction means is part of the processing means that processes digital samples, and that the asymmetry correction means generates the digital compensated signal. The only signal in Fennema comparable to the digital compensated signal is Fennema's TES [track error signal] signal whose positive and negative peaks are defined by the position of the head. It is clear that the mechanical movement of Fennema's head to define the positive and negative peaks is not equivalent to Applicant's signal processing of digital samples to define the positive and negative peaks, and that the Fennema system of involving the actuator and head [and head] movement is not the structural

> equivalent of a digital processor. ***In re Donaldson***, 29 USPQ 2d 1845 (CAFC 1994).
>
> Fennema does not eliminate signal asymmetry. Fennema eliminates head position error by adjusting the position of the head with respect to track center to eliminate offset. The inclusion of Fennema's track centering system in Christner simply does not address the claimed asymmetry correction aspects of Applicant's claims. (Brief-pages 10 and 11.)

The Examiner responds that

> even though the combination does not anticipate the instant claims, it would render the instant invention obvious. ... Fennema balances positive and negative peaks, as depicted in Figure 8. Since the combination would reduce signal asymmetry to a tolerable minimum, the claim limitation is met. (Answer-page 4.)

We agree with Appellants. We cannot see how mechanically moving a magnetic head for track centering, based on equalizing the TES's positive and negative peaks, would meet the language of claim 12 as argued by Appellants. Likewise, we see no motivation to use the teachings of Fennema's tracking signal to make an asymmetry correction to a magnetoresistive head signal.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." ***Para-Ordnance Mfg. v. SGS Importers Int'l***, 73 F.3d at 1087, 37 USPQ2d at 1239, ***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.***, 721 F.2d at 1551, 1553, 220 USPQ at 311, 312-13.

As pointed out above, we see no motivation to combine Fennema with Christner. Although both references address the disk art, Fennema's track correction signal from optical sensors has no relation to the asymmetry correction of a magnetoresistive head signal. Since there is no evidence in the record that the prior art suggested the desirability of such a combination, we will not sustain the Examiner's rejection of independent claim 12.

The remaining claims on appeal, dependent directly or indirectly on claim 12, also contain the above limitation. Thus, we will not sustain the rejection as to these claims.

We have not sustained the rejection of claims 12 through 21 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

REVERSED

James D. Thomas Administrative Patent Judge	)	
Stuart N. Hecker Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Anita Pellman Gross Administrative Patent Judge	)	

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